

Preserve soil's organic matter with a balanced compost mix

The best compost needs air, water and a balance of carbon and nitrogen to accelerate decomposition.

by Paul D. Sachs

■ Organic matter is a valuable asset in soil. However, routine cultural practices can often deplete this important natural resource.

When organic matter levels begin to drop, so do corresponding dependents, including the soil's capacity to hold water and nutrients, and the beneficial activities of microorganisms. Soil structure and fertility are also affected.

Building organic matter is not easy, and raising soil organic matter levels significantly is a monumental task.

Decomposition of organic matter is an integral part of the carbon cycle (see figure 1). If carbon dioxide were not evolved from organic matter and cycled back into the atmosphere, plants would be unable to produce protein, carbohydrates, and other carbon compounds.

Part I of a two-part feature

Green manure crops such as clover or vetch can contribute significant amounts of organic matter to the soil, but it takes time (a year or more) and may be impractical for a homeowner or a golf course superintendent.

Adding compost will stimulate bene-

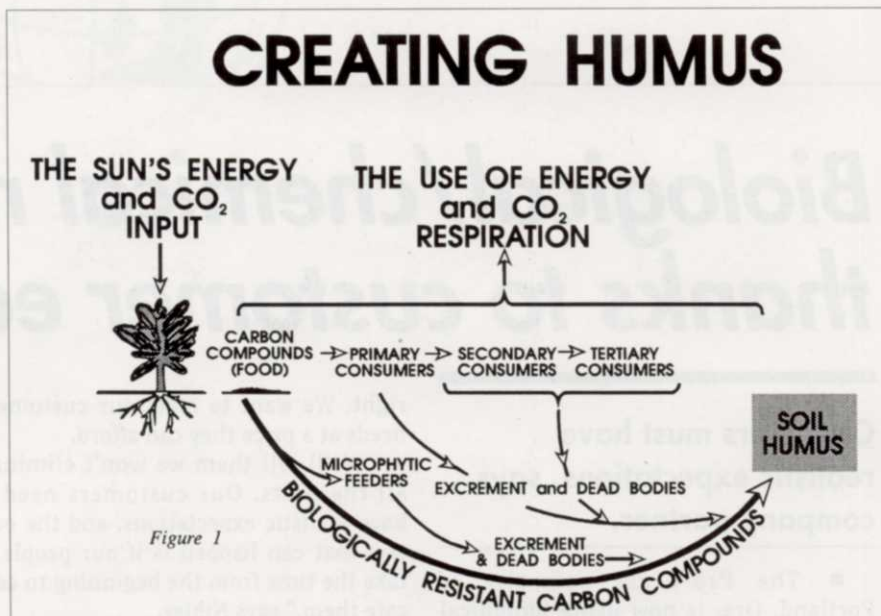


Figure 1

Decomposition of organic matter is an important part of the carbon cycle.

ficial soil functions but compost is not stable humus. Less than one percent of a compost application may actually become stable soil humus (depending on soil conditions, climate, and the way in which the soil is managed). Heavy applications of compost (more than 30 tons per acre) are not recommended because that causes layering, which disrupts the flow of water through the soil. In many situations where organic matter is depleted, adding compost may be an absolute necessity. Repeated applications on an annual basis may be necessary to slowly replenish the soil's organic matter reserve.

However, if cultural practices initially caused the depletion of organic matter, then the problem will eventually reoccur, regardless of how much organic matter is added to the soil. Therefore, know the conditions that cause the depletion of organic matter in the soil and ways to slow down the process.

If you are familiar with making compost and understand what is necessary to speed up the decay process in a compost pile, then it is relatively simple to understand what conditions are needed to slow down that same process in the soil: air, water, a balance of carbon and nitrogen, warm temperatures, and a neutral to alkaline pH to accelerate decomposition.

Aerate properly. Bacteria that

decompose organic matter require oxygen to live. Several other beneficial organisms also need oxygen, so depleting the soil of oxygen is not what is being suggested here. However, it is important to examine exactly where and when aeration is needed.

Sandy soils are naturally aerated because of the coarse particle size; core aeration may not be necessary in some places. Heavily compacted areas such as tees and greens may require aeration regardless of soil classification. Topdress with compost after core aeration whenever possible, to balance out some of the organic matter loss from the infusion of oxygen and create better overall soil conditions.

To test compaction, pour a container of water onto a given area and observe how quickly it seeps into the soil. Beware of a super dry surface, which can actually repel water in some cases. This test should be performed on soils that are already slightly moist. Fast absorption usually means plenty of porosity.

In extremely sandy conditions, it may be necessary to reduce soil porosity. Some managers have successfully reduced soil porosity by adding colloidal phosphate, which contains a natural clay that can bind sand particles together. However, it should only be used where soil phosphate levels are moderate to low.

Other commercially available clays have been used with mixed results. Composts or other materials rich in

organic matter will also bind sand, but can decay rapidly because of the large amount of oxygen that naturally occurs in sandy soils. However, applications of compost can significantly increase root production which adds even more organic matter to the soil.

In heavy, high clay soil, tillage may be necessary. However, if organic matter is low, tillage will accelerate the decomposition of organic matter to an even lower level.

Areas that need renovation often are already low in organic matter.

Slit overseeding may be a more prudent practice. On smaller areas, many managers have used tarps or black plastic to kill existing vegetation by cutting off light. If cultivation is necessary on soils already low in organic matter, tilling at a shallow depth is advised.

Monitor water levels. Too much or too little water can cause problems.

The bacteria that decompose organic matter are just as dependent on moisture as any other living thing, but common sense dictates that the ideal amount of water for plants is also ideal for the accumulation of organic matter. After all, plants are the main source of it.

If water is supplied through irrigation, it is important to monitor moisture levels carefully and practice watering that encourages roots growth. Some soils may require deep and infrequent watering for maximum plant growth, while others may need a low volume, high frequency program.

Remember, drowning roots can be more stressful to the plant than drought.

In December: Temperature and nitrogen levels

Paul Sachs is founder and president of North Country Organics, a Vermont-based manufacturer and supplier of natural fertilizers, soil amendments and environmentally compatible pest controls since 1983.

His book, Edaphos: Dynamics of a Natural Soil System, examines ways in which Sachs believes human beings are linked to the ecosystem, and how that link determines the future of civilization. To order Edaphos, call (802) 222-4277.



Roots buys RGB

NEW HAVEN, CT.—Roots, Inc., the leading manufacturer of biostimulants for turf and nursery, has purchased RGB, the leading maker of chelated micronutrients.

Chelation is a process by which nutrients are made more available to plants.

Roots Chairman Bob Weltzien says

the purchase was motivated by the success of the company's ironRoots products, a combination of micronutrients and biostimulants.

"Roots will now be able to offer the best in both micros and bios," says Weltzien.

Roots will retain all assets and employees of RGB, and will manufacture and distribute out of Kansas City.

Earthgro, Harmony Products sign production/marketing agreement

BLOOMINGTON, MINN.—Earthgro, Inc. and Harmony Products, Inc. signed a five-year marketing agreement on August 15, to sell organic products in areas of high "environmental sensitivity."

Earthgro will be the primary distributor of Harmony's high analysis, slow-release, organic base turf and garden fertilizers for retail and professional markets in the Northeast.

Harmony will be the sole manufacturer of Earthgro's natural fertilizer products in the eastern U.S.

Sources say the agreement will take advantage of Earthgro's wide marketing and distribution networks and Harmony's fertilizer and manufacturing expertise.

The agreement is contingent on certain performance requirements placed on both companies.

Earthgro makes and distributes bagged soils, natural fertilizers and bark products from Virginia to Maine.

Harmony's specialty is its patented, slow-release nitrogen technology.

Predator insect control topic of new manual

■ Learn about the predator concept of biological pest control in a new book by University of Maryland turf and horticulture scientists.

Biological Control of Insect and Mite Pests of Woody Landscape Plants: Concepts, Agents and Methods, is co-authored by Dr. Michael J. Raupp, Roy G. Van Driesche and John Davidson.

Raupp, an entomology professor at the University of Maryland/College Park, has been one of the most noticeable university experts to explore the biological approach as an alternative or supplement to chemical pest control.

Van Driesche is with the University of Massachusetts, Davidson from the University of Maryland.

The authors believe biological control, as an alternative to chemicals, will hopefully avoid the problem of pesticide resistance, pest stimulation and pesticide-

induced outbreaks, as well as possible non-target injury.

The objective of biological control, say the authors, is "to

lower pest densities to innocuous levels and keep them there." Biological control may be achieved by the conservation, augmentation or importation of predators and parasites, or the use of formulated pathogens or nematodes.

The manual reviews biological control procedures, and identifies predators, parasites and pathogens useful in the natural control of harmful pests. The book contains 56 color photos.

The manual was written with support from the Maryland and Massachusetts Agricultural Experiment Stations, the U.S. Department of Agriculture Cooperative Extension Service and Forest Service, and the Mass. Dept. of Environmental Management.

Large orders will receive a discount. To order, contact Steve Rothman, at Agriculture Duplicating, 6200 Sheridan St., Riverdale, MD 20727; (301) 403-4263.